

Previous records.—From *Taphozous perforatus* Egypt.

Material examined.—From *Taphozous cavaticus*, Tarussan Bay, Sumatra, one adult female.

Notes.—My specimen agrees entirely with the figure given by Speiser. As far as I can see this species is strictly congeneric with the preceding.

EXPLANATION OF PLATE XXIV.

Hesperostenes longiceps (Waterhouse) ?; *A*, female, left half dorsal, right half ventral; *B*, posterior tarsus; *C*, anterior tarsus; *D*, dorsal aspect of second antennal segment, distal end upward.

AN AQUATIC DIPTEROUS PARASITE, GINGLYMYIA ACRIROSTRIS TOWNS., AND ADDITIONAL NOTES ON ITS LEPIDOPTEROUS HOST, ELOPHILA FULICALIS.¹

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Descriptions of the remarkable aquatic immature stages of *Elophila fulcalis* were published in the JOURNAL of the New York Entomological Society in June, 1914, but at that time no mention was made of its Dipterous parasite, *Ginglymyia acrirostris*, and no attempt was made to account for the manner of respiration of the gillless lepidopterous pupa, deeply submerged in the swift waters of Fall Creek.

Elophila fulcalis.

The larva, fig. 6, as stated in the previous article, lives under a thin, irregular web of silk, fig. 1, on stones in the swiftest part of the creek. It is abundantly supplied with gills and its respiration is strictly aquatic.

At the time for pupation the thin, irregular web of the larva is cut away, and is replaced by an impenetrable, oval-shaped, roof-like silk covering, fig. 2, which has a number of semi-circular openings

¹ Contribution from the Limnological Laboratory of the Department of Entomology in Cornell University.

at the ends facing up and down stream. Under this covering the life of the pupa is spent.

In 1914, when the previous article was written, it was not understood how the pupa, with its four tubular spiracles and absence of gills, could respire beneath the surface of the water. Later experiments, however, show that though the pupa is beneath the surface of the water, its back at least, on which the spiracles are located, is surrounded by air.

To determine whether the pupa cases contained air or water, stones on which they were attached were slid beneath the surface of the creek to a locality where the water was quiet. Here the cases were pulled loose from the rocks, and each one was found to contain a bubble of air, which had collected beneath the roof of the pupal case in the well aerated water of the riffles.

The necessity for this air explains the death in our breeding cages of more than fifty pupæ in their cases which had been removed from the rocks, though almost every one that was left on the rocks survived till maturity.

Ginglymia acirostris.

Of more than one hundred specimens of *Elophila* collected in Fall Creek in August at least fifty per cent. were parasitized by *Ginglymia acirostris*, a Tachinid fly. The infested specimens contained the withered remains of the lepidopterous larvæ and the puparia of the parasite, a single puparium to a larva. The silken pupal cases of the infested hosts seemed perfectly normal.

In form the puparium, fig. 3, is oval, 5 mm. long and 2 mm. wide. Its color is amber brown. On the dorsal surface it has two conspicuous eye-like spiracles connected by a U-like structure which points away from the head. The U connecting the spiracles represents respiratory tubes of the last larval instar. It penetrates the puparium through a single circular opening at its base. Behind the circular opening where the respiratory tubes penetrate the puparium there is a small, heavily chitinized circle, whose function is at yet unknown.

A single larva of *Elophila* was found in the prepupal instar which contained the parasite, evidently in the last instar. In this specimen, fig. 4, the back of the larva on the suture between the fourth and fifth

